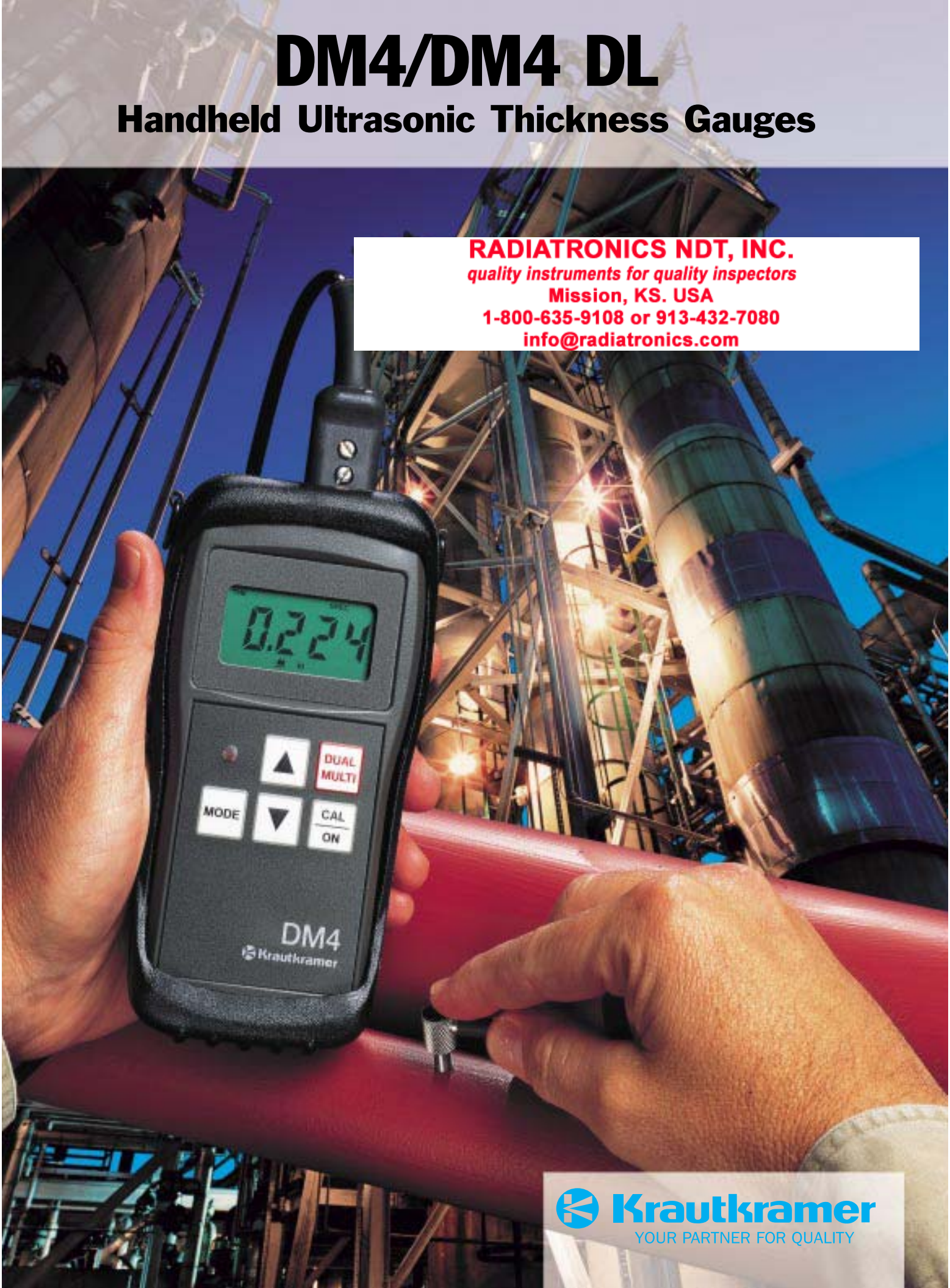
DM4/DM4 DL

Handheld Ultrasonic Thickness Gauges



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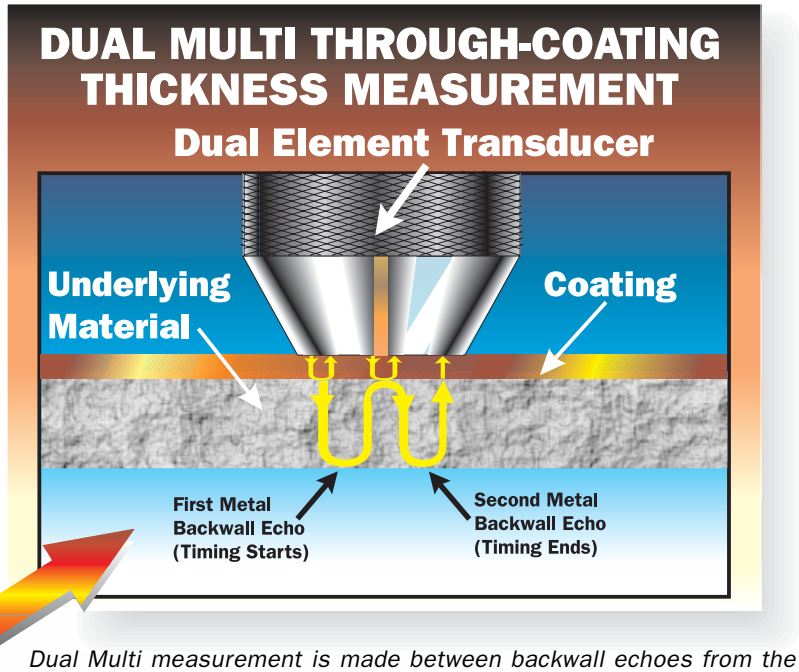
DM4 and DM4 DL D-Meter Thickness Gauges... thickness testing, even through coated materials!

Now, the DM4 and DM4 DL are capable of measuring through coatings (paint) without the coating layer being included in the digital thickness reading. Simply press the DUAL MULTI key and read the remaining metal thickness without the time and expense of removing protective coatings and reapplying. The DUAL MULTI, dual-element/multiple echo measurement mode is “unique” to the DM4 and DM4 DL handheld digital thickness gauges. The same dual-element probes that provide best results on internally corroded/eroded structures and general thickness applications in the standard thickness mode are used. No special probes, switching of probes, or complicated operation or interpretation is necessary.

If multiple backwall echoes are not possible on your application, the coupling indicator will not illuminate, the display will blank, and the red LED will flash. Then, a simple press of the DUAL MULTI key will return the instrument to the standard thickness mode. Whether or not to remove paint is then a decision that will need to be made.



Dual Multi measurement is made between backwall echoes from the metal, and the echoes from the coating (paint) layer are ignored.

Measure on rough and corroded surfaces
The DUAL MULTI mode is also a good method to use to overcome coupling problems and errors encountered when measuring on rough and corroded surfaces. The heavier couplant layer that is typically required to obtain measurements on rough surfaces is not included in the digital thickness reading. Surface preparation is eliminated or minimized.

“D-Meters” have user preferred features for general-purpose thickness gauging applications..

Inspection preferred features:
Don’t let the small size and few keys fool you. The DM4 and DM4 DL are powerful measurement tools with MODE SELECT to activate the following features:

- **THK**, Normal Thickness Measurement and 1-Point calibration mode displays and holds measured thickness reading until another measurement is made. Fast, 1-Point thickness calibration is performed in THK mode.
- **2-Pt**, Two Point Calibration mode allows calibration to two known thicknesses of the material to satisfy special application requirements.
- **VEL**, Material Sound Velocity mode enables display of the instrument’s current calibrated velocity and simple calibration when a material’s velocity is known.
- **MIN**, Minimum Capture mode displays the minimum thickness detected in a series of readings.
- **Backlight** mode allows the user to select OFF, ON, or AUTOMATIC to suit inspection area lighting conditions.
- **GAIN** mode allows the user to manually adjust the operating gain of the instrument by selecting automatic (AUTO), low (LO), medium (MED), or high (HI) to satisfy the application.
- **HI/LO** Alarm Limits mode alerts the user when a thickness reading is less than or greater than a user set minimum/maximum thickness value.
- **DIF**, Differential mode displays the ± difference between the actual thickness reading and a user set nominal value.
- **FLTR**, Band pass filter selection of LO or HI to match frequency of probe for best performance.

Built to last
The DM4 and DM4 DL are designed for dependable performance in harsh industrial environments. Reliability and low, infrequent service costs are ensured by a sealed membrane switch keypad, impact-resistant housing, gasket seal, single printed circuit board, and a full two-year warranty on parts and labor.

The batteries are contained in a gasket sealed, isolated battery compartment eliminating contamination or physical damage to the electronics from moisture, dirt, or battery leakage.

Rubber field case accessory has neck strap, wrist strap, hanging loop, and prop-up stand for ”hands-free” use.

Small, comfortable, convenient package
- Fits comfortably in the palm of the hand for one-thumb operation
- Lightweight 9 oz. (255 g) - no operator fatigue for tireless use
- Rubber Field Case provides extra protection and practical options for user comfort and convenience.

Simple, reliable operation
- Automatic Probe Zero for fast calibration and simple use. Probe Zero is continuously updated during use to ensure reliable measurements by compensating for probe wear, expansion, or contraction. No action is required of the user and probe zero blocks are eliminated.
- Only 5 keys (DM4) and 9 keys (DM4 DL) control all functions.
- Standard AA alkaline batteries provide up to 200 hours of use. No special battery packs or battery chargers are required.
- Big digits on high-contrast backlit display are easily read from any angle under all lighting conditions.
- Instrument features can be tailored (activated/deactivated) to meet the requirements of the job and preference of the user from the front panel keypad.

Accurate, economical data collection and data management

Fast, error-free, data logging and reports

- 5390 reading sequential data logger on-board the DM4 DL
- Multiple files - data can be stored in 1 to 999 user selectable files
- Obstruct (OBST) can be stored to identify inaccessible locations
- Fast direct printing of DM4 DL data files in 80-column format using serial printers. File header information and basic statistics are selectable for the report
- User selectable BAUD rate for flexible RS232 communications
- UltraMATE™ Windows™ 95/NT Software provides color reports, histograms, copy & paste to MS-Word and EXCEL, compare files, and an auto-connect feature
- DM4 DL Utility Software simplifies transfer of stored data to a PC
- Exports data in ASCII delimited format for use with spreadsheet programs for further analysis and calculations
- DM4 DL is compatible with our Thickness Data Management software programs
- No loss of memory when batteries are removed - 10 year memory retention

DM4 DL Thickness Data Management System

Smart to handle a wide range of remaining wall thickness applications

Compatible with new DIALOG Intelligent Transducers, and all standard probes, to satisfy a wide range of applications:

- **DIALOG Intelligent Transducers** are automatically recognized by the instrument for the benefits of quick setup, best performance, and test documentation. These new probes have an internal memory chip which is programmed with performance parameters, documentation information (probe model and serial number), and in some cases application specific information to solve special measurement needs.
- **HT400 High-Temperature Probe** provides **Stable Readings on Hot Surfaces** for inservice inspection of steam and process equipment up to 400° F (204° C) without cooling the probe. An armored probe cable with protective stainless jacket for high-temperature applications and quick-change extension tubes for reaching through access-holes in insulation are available options.
- **General-Purpose Probes** for most frequently encountered applications (i.e. process piping and equipment, tubular goods, plate, boiler tubes, pressure vessels, storage tanks, ship hulls, etc.)
- SEND **Remote SEND Probes** with built-in membrane switch SEND key for quick and easy data logging.
- **Thin Materials Probes** for thin-wall, small diameter tubes and sheets, plus detection of pitting corrosion and extreme wall loss.
- **High-Penetration Probes** for coarse-grain or highly attenuative materials (i.e. castings, non-metals like plastics, FRP & rubber,).
- **Small 3mm and 5mm Footprint Probes** to measure in the bottom of external pits, small diameter piping and tubing, and areas of limited access.
- **Wear-Resistant Probes** provide longer service life on small diameter curved parts, rough surfaces, and with the Minimum Capture Mode of DM4/DM4 DL.

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DM4/DM4 DL
Thickness Gauge

Base Instrument Packages

DM4 or DM4 DL Thickness Gauge
Two 1.5V AA Alkaline Batteries
Carrying Case
Operating Instruction Card (s)
Operating Manual
Certificate of Calibration

Accessories

FB-579 Field Accessory Belt with removable pouches
PCCBL-841 (DM4 DL) 9-PIN Serial PC Cable
U-MATE (DM4 DL) UltraMATE Data Control Software Program
UTL-190 (DM4 DL) Data Transfer Utility software program
LCC-315 Locking transport and storage case
HTC-010 HiTempco Couplant (2 oz.tube)

FB-579 Field Accessory Belt

Specifications

Operating Principle
Ultrasonic pulse/echo

Probe Zero Adjustment
Automatic, or manual 2-pt. calibration

V-Path Correction
Automatic, micro-processor controlled

Measuring Range
.025"- 20.00" (.6 - 500 mm) depending on probe, material, surface condition, and temperature

Displayed Resolution
.001 or. 01 up to 9.999 inches,.01 above 9.999 inches;
.01 or .1 up to 99.99 mm, .1 above 99.99 mm

Measurement Update Rate
4Hz; 25Hz in Minimum Capture Mode

Gain
Automatic, or Manual (Hi, Med, Lo)

Material Velocity Range
39,000 to 393,700 in./sec.;
1000 to 999 m/sec.

Receiver Bandwith
1 MHz to 10 MHz (-3 dB)

Display Type
4 digit LCD, .5" (12.7 mm) high, direct drive, with electroluminescent backlight

Power Supply
2 ea. 1.5V AA alkaline cells

Battery Life (operating time)
Up to 200 hours @ 25% duty cycle without backlight

Auto Shut-off
After 3 minutes of non-use

Data Logging Memory Capacity (DM4DL)
5,390 readings

Number of Data Files (DM4 DL)
1 to 999 (user selectable)

Memory Retention (DM4 DL)
Typically 10 years

Data Output Port (DM4 DL)
Serial, asynchronous; 0, +5V TTL, 8 bit, 1 stop bit, selectable baud rate (maximum 9600)

Seven Report Languages (DM4 DL)
English, German, French, Italian, Spanish, Japanese, and Russian

Operating Temperature Range
+10°F to 120°F (-10°C to +50°C)

Size (L x W x D)
5.8" x 3.0" x 1.4" (at thickest point); 146.0 mm x 76.2 mm x 34.3 mm

Weight
9 oz. (255 g) including batteries

Hazardous Area Operation
Safe operation as defined by MIL-STD-810E, Method 511.3, Procedure I.

- *Specifications subject to change without notice*
- *DM4 and DM4 DL are covered by a full two-year warranty on parts and labor*

VISA MasterCard accepted in Noth America

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Our facility's quality system conforms to ISO 9001. ANSI/ASQC Q91.

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